composition. Indeed the first step which he thought it necessary to take, before proceeding with the investigation at all, was to ascertain whether these extractive matters are bodies of a definite chemical nature, or whether they are merely accidental mixtures of various excrementitious substances thrown out by the system, and differing in their nature according to circumstances. In order to arrive at a positive conclusion on this point, several series of experiments were undertaken. The method devised for the purpose of separating the extractive matters from the other constituents of urine, and obtaining them in a state of purity, presents few features of novelty as compared with those previously employed. The experiments necessarily occupied a considerable time, since the author considered it essential, in order to avoid decomposition, to evaporate all the solutions at the ordinary temperature by means of a current of air. The certainty of the conclusions arrived at afforded, however, ample compensation for the loss of time and additional labour thus occasioned. The composition of the extractive matters was determined by analyzing their lead compounds, since the substances themselves cannot be obtained in a state fit for analysis.

From the experiments described in this part of his paper the author thinks he is justified in drawing the following conclusions:—

1. Human urine contains at least two peculiar and distinct extractive matters, one of which is soluble in alcohol and ether, while the other is soluble in alcohol, but insoluble in ether. The existence of an extractive matter insoluble both in alcohol and in ether is extremely doubtful.

2. The composition of these extractive matters varies slightly, without any corresponding difference in their appearance and properties being perceptible; but these variations are not due to any difference in the quality of the urine or the source whence it was derived, but rather to the decomposition which takes place during the process employed in their preparation, and which cannot be entirely avoided.

3. When quite pure, the extractive matter soluble in alcohol and ether has a composition corresponding with the formula $C_{86} H_{51} NO_{52}$, while that of the extractive matter soluble in alcohol but insoluble in ether is expressed by the formula $C_{38} H_{27} NO_{28}$.

January 18, 1866.

Lieutenant-General SABINE, President, in the Chair.

The President stated that Dr. William Bird Herapath, who by reason of non-payment of his annual contribution ceased to be a Fellow of the Society at the last Anniversary, had applied for readmission. The Statute relating to the case was read, and, in accordance therewith, notice was given that the question of Dr. Herapath's readmission would be put to the vote at the next meeting.

The following communications were read:—

I. "Sixth Memoir on Radiation and Absorption." By Prof. J. Tyndall, F.R.S. Received December 21, 1865.

(Abstract.)

In this paper the author considers the deportment of certain additional elementary bodies towards Radiant Heat. He exposes powders and liquids of the same physical character, but differing from each other chemically, at a focus of dark rays, and describes the different effects produced. He examines and explains the experiments of Franklin on the absorption of solar heat. He then determines the radiative power of a great number of substances in the state of fine powder, and finds, contrary to the current belief, that in this state also chemical constitution exercises a paramount influence. The results obtained by previous experimenters in connexion with this subject are illustrated and explained. The reciprocity of radiation and absorption on the part of fine powders is also illustrated. It is moreover shown that the heat emitted from different sources, at a temperature of 100° C., varies in quality, this being proved by its unequal transmission through plates of rock-salt of perfect purity. The absorption by such plates varies from 4 to 30 per cent. of the incident radiation.

II. "On the Spectrum of Comet 1, 1866." By William Huggins, F.R.S. Received January 11, 1866.

The successful application of prismatic analysis to the light of the nebulæ showed the great importance of subjecting the light of comets to a similar examination, especially as we possess no certain knowledge of the intimate nature of those singular and enigmatical bodies, or of the cosmical relations which they sustain to our system. The importance of a prismatic analysis of cometary light is enhanced by the consideration of the general resemblance which some of the nebulæ present to the nearly round vaporous masses of which some comets, in some positions at least in their orbits, appear to consist,—a resemblance which suggests the possible existence of a close relation between nebulous and cometary matter.

I made several unsuccessful attempts to obtain a prismatic observation of Comet 1, 1864. The position of the comet and the weather were unfavourable. M. Donati succeeded in making an examination of the spectrum of this comet. "It resembles," says M. Donati, "the spectra of the metals; in fact the dark portions are broader than those which are more luminous, and we may say these spectra are composed of three bright lines"*.

Yesterday evening, January 9, 1866, I observed the spectrum of Comet

* Monthly Notices, Royal Astronomical Society, vol. xxv. p. 114.